

REMARKS:

SPECIFICATION AMENDMENTS

The Applicants have amended portions of the specification to make the language of the description of FIGs. 5A-5E consistent with the language of the claims and the summary.

5 Specifically, the applicants have replaced “magnetic element” with --magnetic structure-- in several places. The Applicants submit that the terms clearly refer to the same thing. Note that the Summary, at page 2, lines 15-18 describes sense field generating magnetic structures that may be disposed on moveable or non-moveable portions of the micro-machined optical element. Page 11, lines describes a magnetic material similarly situated. The description of FIG. 5A refers to magnetic materials **508** and magnetic elements **508**. The Applicants submit that the terms “magnetic material”, “magnetic structure” and “magnetic element” all refer to the same thing. As such these amendments merely make explicit that which was implicit in the specification as originally filed. As such, no new matter has been entered with these amendments.

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CLAIM AMENDMENTS

The Applicants have amended claim **12** as described below. The Applicants have also amended claim **21** to correct a minor typographical error. A semicolon (;) at the end of claim **21** has been deleted and replaced with a period (.).

ELECTION/RESTRICTIONS

20 The Examiner has withdrawn the previous restriction requirement for all claims except claims **24-26**. In requiring restriction to these claims, the Examiner states that these claims deal with a temperature measuring means and means for compensating for a variation due to temperature. The Examiner states that claims **24-26** are related to the remaining claims as combination and subcombination. The Examiner argues that the combination of these claims does not require the particulars of claim **1** for patentability because the apparatus of claim **1** may function properly without the temperature measuring means of claims **24-26** and the subcombination has separate utility such as in optical switches. The Examiner has made the restriction requirement final.

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In response, the Applicants submit that the restriction requirement is not proper.

30 According to MPEP 806.05(c)(I) states:

Where a combination as claimed *does not set forth the details of the subcombination as separately claimed* and the subcombination has separate utility, the inventions are distinct and restriction is proper if reasons exist for insisting upon the restriction; i.e., separate classification, status, or field of search. [Emphasis added]

5 In the present case, however, claims **24-26** (the combination claims) depend either directly or indirectly from claim **1** (the subcombination claim). Since it is well-established that a dependent claim is construed to include all the limitations of every claim from which it depends (see 35 USC 112, fourth paragraph), claims **24-26** do in fact set forth the details of the subcombination as separately claimed in claim **1**. As such, the
10 criteria for a proper combination-subcombination restriction set forth in MPEP 806.05(c) are not met. Thus, the restriction requirement is improper and the Applicants respectfully request that, in view of his rejection of the Examiner consider rejoin and examine non-elected claims **24-26**.

CLAIM REJECTIONS

15 35 USC 112

The Examiner has rejected claims **12-23** under 35 U.S.C. 112, second paragraph as being indefinite. The Examiner states that it is not clear whether the “magnetic structure” recited in claim **12** refers to the magnetic sensor or a different structure. To expedite prosecution, the Applicants have amended claim **12** to recite that the apparatus further includes a magnetic structure. Thus it is clear that the structure is separate.
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The Applicants have also amended claim **12** to unambiguously state that the magnetic structure can either create the sense magnetic field or change the magnitude or direction of the sense magnetic field.

25 The applicants submit that the amendment to claim **12** merely make explicit that which was implicit in claim **12** as filed. As such, no new matter has been entered with this amendment. Furthermore, this amendment does not narrow any limitation of claim **12** within the meaning of the decision in *Festo Corp. v. Shoketsu Kogyo Kabushiki Co., Ltd.*, 234 F3d 558, 566, 56 U.S.P.Q.2d 1865 (Fed. Cir. 2000) 535 U.S. 722, 152 L. Ed. 2d 944, 122 S. Ct. 1831, (2002).

35 USC 102

The Examiner has rejected claims **1-8** and **11** under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,629,918 to Ho et al. (hereinafter Ho). In rejecting claims **1-5**, the Examiner refers to Fig. 1, Fig. 8i, column 4, lines 10-55 and column 10, lines 11-20 of Ho. In rejecting claims **6-8**, the Examiner refers to Figs. 8h-8i of Ho. In rejecting claim **11**, the Examiner states that it is inherent in Ho that the magnetic sensor may respond to separate magnetic fields from that used to actuate the optical element.

The Applicants respectfully traverse the rejection. Claim **1** recites “a magnetic sensor disposed on the micro machined optical element.” Ho, by contrast is devoid of any teaching or suggestion of a magnetic sensor so disposed. Instead, Ho teaches “[a] Permalloy layer or a magnetic coil is disposed on the flap such that when the flap is placed in a magnetic field, it can be caused to selectively interact and rotate out of the plane of the magnetic actuator” (see column 4, lines 14-18). Ho teaches and describes a magnetic coil actuator in Fig. 1. Similarly, Figs. 8h-8i of Ho show a flap with a coil actuator. Nowhere does Ho teach or suggest the use of such a coil for anything other than magnetically actuating the flap 14. Thus Ho does not teach all the limitations of claims **1-3**.

Ho is devoid of any teaching or suggestion of magneto resistive sensors, giant magnetoresistance sensors, colossal magnetoresistance sensors, anisotropic magnetoresistance sensors, magnetic tunnel junction devices, Hall effect sensors, flux sensing coils, magnetostriction sensors and magneto optic sensors recited in claim **4**. Although Ho does teach a coil, he does not teach or suggest using it for flux sensing. As such, Ho does not teach all the limitations of claim **4**.

Column 10, lines 11-20 of Ho disclose forming a coil 14 on the flap and one or more other coils 74 on adjacent regions of the wafer. The coils 74 generate the fields for operating the flap 14. However, this section does not teach or suggest a magnetic sensor disposed on fixed portions such as a sidewall or the base as recited in claims **5, 6** and **7** respectively. Nor does Ho even discuss a top chip as recited in claim **8**.

For all the reasons set forth above, the Applicants submit that Ho does not teach all the limitations of claims **1-8** as they presently stand in the application. As such, Ho does not

anticipate claims **1-8**. Therefore, claims **1-8** define an invention suitable for patent protection.

In addition, claim **11** depends from claim **1** and recites additional features therefor. As such, and for the same reasons set forth with respect to claim **1**, the applicants submit that
· 5 Ho does not anticipate this dependent claim, which defines an invention suitable for patent protection.

35 USC 103

The Examiner has rejected claims **9-10** under 35 USC 103(a) as being unpatentable over Ho as applied to claims 1-8 above in further view of MEMS Magnetic Sensor in Standard

10 CMOS, Science Closure and Enabling Technologies for Constellation Class Missions, pp. 99-102, UC Berkeley, Calif., by Eyre et al. (hereinafter Eyre). In rejecting the claims, the Examiner states that although Ho does not teach coupling the magnetic coils on the moveable flap and the fixed portion using a Wheatstone bridge circuit, Eyre does teach using such a circuit to transducer magnetic field fluxes to electrical voltage signals. The

15 Examiner asserts that Eyre is analogous art because it deals with MEMS. The Examiner argues that it would be desirable to use Wheatstone bridge circuit in Ho because such a circuit is commonly used in sensing in general. The Examiner concludes that using available techniques and routine modification, it would have been obvious to one of ordinary skill at the time to obtain the claimed invention.

20 The Applicants respectfully traverse the rejection on the grounds that, for the reasons set forth above, Ho does not teach the use of a magnetic sensor as recited in claim **1**. As such, no combination of Ho with Eyre teaches the use of a magnetic sensor and a bridge circuit in an apparatus of the type set forth in claims **9** and **10**. As such, a *prima facie* case of obviousness is not present and claims **9** and **10** define an invention suitable for
25 patent protection.

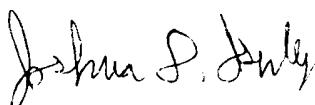
ALLOWABLE SUBJECT MATTER

The Examiner has indicated that claims **12-23** would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, for the reasons set forth above, the Applicants believe that the claims
30 as they presently stand in the application are allowable over the prior art of record.

CONCLUSION

For the reasons set forth above, the Applicants submit that all claims are allowable over the cited art and define an invention suitable for patent protection. The Applicants further submit that the restriction of claims **24-26** is improper. Furthermore, the Applicants submit that claims **24-26** are allowable since they depend, either directly or indirectly, from claim 1, which is believed to be allowable for the reasons set forth above. The Applicants therefore respectfully request that the Examiner enter the amendment, , rejoin claims **24-26**, reconsider the application, and issue a Notice of Allowance in the next office action.

Respectfully submitted,



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